

**EXHIBIT C**  
**LODE CLAIMS AND MILLSITES AFFECTED BY MINING**  
**OF THE MONITOR #3 AND BLUE CHALK NORTH #2**

Project: Monitor #3 Phase 1

Project area is located on claims with "first-half" final certificate issued (effective Nov. 15, 1993). These claims are part of mineral survey M.S. 7374 and patent application UTU-70404.

Lode Claim	UMC #	Millsite	UMC #
Monitor 19	95183	BWMS 42	348257
Monitor 89	95250	BWMS 43	348258
North Wind 1	95335	BWMS 44	348259
North Wind 10	95342		
North Wind 11	95343		
North Wind 21	95350		

Project: Blue Chalk North #2

Project area is located on claims with "first-half" final certificated issued (effective July 29, 1993). These claims are part of mineral survey M.S. 7372 A&B and patent application UTU-69736.

Lode Claim	UMC #	Millsite	UMC #
Dayle 1	277249	BWMS 4	348217
Blue Chalk 3	207514	BWMS 5	348218
Blue Chalk 4	207515	BWMS6	348219
		BWMS 7	348220
		BWMS 8	348221
		BWMS 9	348222
		BWMS 10	348223
		BWMS 101	348686
		BWMS 102	348687
		BWMS 103	348688
		BWMS 104	348689
		BWMS 105	348690
		BWMS 106	348691

the soils will be salvaged at each site sufficient to topsoil the dumps and backfilled pits. These sites can then be seeded to provide a vegetative cover similar to the existing native plant community.

This Plan includes the costs of reclamation and calculations of the amounts required for bonding through the year 2037.

A minor amendment to the plan, completed in March 1996, dealt with a modification to the sequence of mining the Monitor and Blue chalk deposits.

## 2.0 Existing and Proposed Mine Operations

### 2.1 Pit Complexes

The Brush Wellman mining operations consist of a number of separate open pits with adjacent overburden mine dumps. The mining methods utilized were described in detail in Brush's previous application materials. These mining methods have not been changed and therefore will not be described further in this revision document.

There are ~~eight ten~~ existing open pits and ~~nineteen~~ ~~seventeen~~ proposed pits in the mine plan. Plate 2.0-1 shows the locations and configurations of the present and proposed pits and dumps, including their ultimate acreages. The sequence of pit operations is described in Table 2.1-1 indicating the year in which each pit is presently scheduled to be opened.

### 2.2 Roads

The majority of the present system of roads and ways existed in the area prior to the exploration and development of the Topaz Mining Property. Some of these existing roads have been upgraded and utilized in the development and operation of the mines and still serve as access roads for other land users. During the course of its operations, Brush develops minor lengths of new roads to connect the pits with the existing roads. All of these existing and proposed roads

Table 2.1-1 Mining Schedule Summary

<u>Existing Pits</u>	<u>Year Opened</u>
Roadside I	1968-69
Blue Chalk North #1	1971-72
Fluro #1	1974-75
Taurus	1979
Sigma-Emma	1979-80
Roadside II	1981
Rainbow #1	1985
Blue Chalk South #1	1985-86
Roadside/Fluro #3	1990-91
Section 16 N#1	1990-91

<u>Proposed Pits</u>	<u>Year Presently Scheduled to be Opened</u>
Roadside/Fluro #3 & #4	<del>1989</del> & 2004
Section 16 N#1, S#1, N#2, S#2, N#3	<del>1991, 1998,</del> 2001, 2008 , 2009 , 2030
Monitor #1, #3, #2, #3, #1	<del>1993,</del> 1996, 2005, 2016
Blue Chalk South #2, #3	<del>1994,</del> 2013 & 2017
Rainbow #2, #3	<del>1997,</del> 2001 & 2012
Blue Chalk North #2, #3	<del>1996,</del> 2002 & <del>2006</del>
Fluro #2	2008
Camp #1	2020
Southwind #1	2024

to which will be utilized by Brush are shown on Plate 2.2-1. Plate 2.2-1 indicates which of the roads (new roads constructed by Brush) will be reclaimed. All other roads will be turned over for their continuing uses. The reclamation plans for the roads are described in Section 4.4 of this document.

### 2.3 Structures

The mine camp area consists of mobile homes, and metal buildings, and a gasoline, diesel fuel, and waste oil tank farm that is comprised entirely of above-ground storage tanks (ASTs). The former underground storage tanks have been removed and replaced by the ASTs. The site is now considered closed by the Division of Environmental Response and Remediation. The metal buildings are on concrete pads. There is a second camp area utilized intermittently by earth-moving contractors during open-pit construction. The second area is utilized by a contractor for mobile home sites and maintenance shops. The reclamation plans for these areas are described in Section 4.4 of this document. The locations of the camps are shown on the map entitled Acreage of Current and Proposed Areas of Disturbance that was submitted to the Division on May 17, 1985. That

submittal is included in the accompanying volume entitled "Pre-1988 Permit Application and Correspondence Summary". There are no utility transmission lines in the mine vicinity.

#### **2.4 Disturbed Acreage**

The total disturbed acreage for the permit includes both lands disturbed since 1968 and lands forecast to be disturbed through 2034. Table 2.4-1 is a summary of the

Table 2.4-1 Disturbed Acreage, Existing and Proposed

Pit Complexes	Pits			Dumps		
	Existing	Released	Proposed	Existing	Released	Proposed
Roadside	56.6	28.0 B,P	0	113.6	113.6 V	0
Blue Chalk North	19.6	0	18.0	24.4	19.0 V	B*
Blue Chalk South	29.7	18 B	22.8	69.0	22.0 P	B*
Fluro	22.6	0	19.1	64.9	64.9 V	*
Sigma Emma	26.7	26.7V	0	69.4	69.4 V	0
Taurus	13.2	13.2V	0	33.3	33.3 V	0
Rainbow	34.9	0	26.5	58.0	40.0 V	B
Roadside/Fluro	16.3	0	20.2	0	0	B
Section 16 North	10.7	0	36.5	35	0	B*
Section 16 South	0	0	19.0	0	0	36.0 & B
Monitor	0	0	68.8	0	0	82.5 & B
Camp	0	0	17.1	0	0	30.5
Southwind	0	0	24.2	0	0	39.3
Total	230.3	85.9	272.2	467.6	362.2	188.3

\* Dumps is superimposed on existing dump

B Waste will backfill pits

V Disturbance released from surety by variance.

R Disturbance released from surety following successful reclamation

P Pending Release (Spring 1996)

Total Pits and Dumps - Existing	697.9
Total Pits and Dumps Released from Surety	(448.1)
Total Pits and Dumps Currently Disturbed and not Released (3-27-96)	249.8
Total Pits and Dumps - Proposed	460.5
Roads (Existing = 7.1, Proposed = 5.7)	12.8
Camps Existing	18.0

Some previously mined pits will be backfilled with overburden during future mining operations in adjacent pits. Table 4.3-2, Pit Backfill Schedule and Acreage, and Plate 4.3-3 describe the details of the pit backfill plans. The pit backfill areas will not be topsoiled, but will be surfaced with coarse rhyolite rock. The exceptions are portions of Roadside I&II and Section 16 N #1&#2 which will have 18 inches of topsoil over the rough rhyolite backfill. All tuff overburden disposed of in the backfilled pits will be placed in tuff disposal cells or pockets that will be left for this purpose during backfilling. Brush's mining experience indicates that such cells will take up no more than 15 percent of the surface area of any backfilled pit. The surface of each cell or pocket will be covered with 3 feet of rhyolite overburden. This will be accomplished by selectively piling rhyolite adjacent to the tuff disposal cells so the rhyolite can then be pushed over the tuff with a bulldozer (Figure 4.3-3). In all cases there is an adequate supply of rhyolite in each pit complex. Many pits will be left open either to provide access for future underground mining, or because backfill material is not available from adjacent pits.

Underground mining for the ore remaining after exhaustion of the shallow ore deposits by surface mining will depend on economic conditions in 2034. The future pits to remain open as access for underground mining are: Monitor #1,#2,#3; Roadside/Fluro #3&#4, Rainbow #2&#3



**Table 4.3-2 Pit Backfill Schedule and Acreage**

<u>Pit Complex</u>	<u>Source</u>	<u>Recipient</u>	<u>Acreage</u>	<u>Year Scheduled</u>
Roadside/Fluro #3&#4		Roadside I & II	39.68	<del>1992</del> /2005 (90 % complete)
Fluro	#2	#1(part)	11.50	2008
Rainbow	#2	#1	16.53	1998
	#3	#1	18.33	2013
Blue Chalk South	#2	#1&BCN#3*	14.85	<del>1994</del> 2002* (90% Complete)
	#3	#1&BCS#2*	14.85	2018
Blue Chalk North	#2	#1	19.57	1997* <del>2002</del>
	#3	#2	10.65	2014
Section 16	South #1, North #3	North #1,#2	17.98	2010
Monitor	#2	#1*	<del>13.10</del>	<del>2001*</del>

Figure 4.3-3 and Plate 4.3-2 depict backfilling and reclamation techniques.

\* Enhanced backfilling

and the North portion of Fluro #1 and Fluro #2. Two existing pits, Taurus and Sigma Emma, and seven proposed pits (Camp #1, Southwind #1, Blue Chalk North #3, Blue Chalk South #2&#3 and Section 16 South #1&#2) will be left open because they will be mined at the end of the mining cycle and backfill material will not be available.

The mine pits will have stable, terraced highwalls of rhyolite and stable footwalls of tuff. Figure 4.3-4 provides a typical pit cross-section showing these features. The

17.88 acre surface. The overburden from North #1 and #2 and South #2 will be placed on the dump so the rhyolite covers the slopes and top except for an 18 acre ore pad.

The 18 acres of ore pad will be topsoiled 3 feet deep with 87,120 cubic yards of topsoil. The remaining rhyolite-covered dump top and slopes will be topsoiled with 136,730 cubic yards (Table 4.3-1) of alluvial soils and seeded. The rhyolite-covered backfilled pits will be covered with 18 inches of topsoil (43,270 cubic yards) and seeded with rabbitbrush.

The total topsoiling will require 267,120 cubic yards of soil leaving an excess of 5,131 cubic yards (Table 4.3-1). This is a negligible amount and will be spread with the bulk of the topsoil.

#### **4.3.3 Monitor Pit**

The Monitor complex consists of four pits, Pits # 1, #2, #3, totalling ~~68.76~~ 68.84 acres. Pit #1 includes a small 6.89 acre existing pit originally excavated by Anaconda Minerals Company (Plate 2.0-1). The 82.46 acre dump is located over the existing small dump generated by Anaconda's past operation. The pits are located over minor stony soil areas and alluvial soil areas. During pit construction, the alluvial soils will be stripped to an average depth of 2.4

dump top and slopes will be covered with soil. This will require 76,085 cubic yards of soils. The total volume of topsoil required is 123,517 cubic yards (Table 4.3-1).

#### 4.3.6 Fluro Pit

The future mining in the Fluro #2 Pit will disturb 19.10 acres of new land surface (Plate 2.0-1). A portion of the overburden from this pit will be placed in an 11.5 acre south portion of the existing Fluro pit. To allow for the possible disposal of tuff overburden on the dump surface, a pocket will be left in the backfill. This pocket will have a surface area that will not exceed 15 percent of the pit backfill surface. A stockpile of 8,373 cubic yards of rhyolite will be stored adjacent to the tuff disposal pocket to be used to cover the cell when it is filled (table 4.3-1). The balance of the Fluro pits must remain open to provide access for possible future underground mining.

#### 4.3.7 Blue Chalk North Pits

The Blue Chalk North complex consists of an existing pit (#1) and two proposed pits (#2&#3) (Plate 2.0-1). The future mining in the Blue Chalk North pits will result in backfilling the #1 and #2 pits. The Blue Chalk North site is located in the hills where no topsoil is available.

Approximately 15 percent of the ~~30.22~~ 32.57 acres of backfilled



present in the baseline plant communities and observations of plants colonizing disturbed sites. The recommended revegetation seed mix is shown in Table 4.6-1. Crested wheatgrass, squirreltail and green rabbitbrush have been the most successful of all the desirable plants in colonizing

---

Table 4.6-1 Seed Mix for Topsoiled Areas (9 varieties)

<u>Scientific Name</u> <u>lbs./acre</u>	<u>Common Name</u>	
<u>Agropyron cristatum</u>	crested wheatgrass	3.0
<u>Sitanion hystrix</u>	squirreltail	2.0
<u>Oryzopsis hymenoides</u>	Indian ricegrass	2.0
<u>Sporobolus cryptandrus</u>	sand dropseed	0.5
<u>Melilotus officinalis</u>	yellow sweetclover	1.0
<u>Penstemon palmeri</u>	Palmer's penstemon	1.0
<u>Atriplex canescens</u>	four-wing saltbush	1.0
<u>Atriplex confertifolia</u>	shadscale*	1.0
<u>Chrysothamnus viscidiflorus</u>	green rabbitbrush	<u>1.0</u>
	Total	12.5

Mulch: Hay or Straw at 4,000 lbs./acre (dump berms only)

Fertilizer:

mono-ammonium phosphate 16-20-0 at 150 lbs./acre\*  
~~sulfur coated urea, 39-0-0 10%S, at 128 lbs./acre~~  
~~superphosphate, 0-48-0, at 200 lbs./acre~~  
 gypsum,  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$  (20%Ca), at 350 lbs./acre  
 \* Approved in 1992

---

Table 4.6-2 Rhyolite-Covered Dumps Which Have Been  
Ripped and Seeded

Dump	Area (acres)
Taurus	33.32 (1)
Sigma Emma	13.28 (1)
Blue Chalk	72.8 (2)
Rainbow	58.03 (2)
(1) Taurus and Sigma Emma pits were ripped and seeded in 1987.	
(2) Blue chalk and Rainbow pits were ripped and seeded in 1988 and 1989, respectively.	

Table 4.6-3 Seed Mix for Rhyolite-Covered Dumps and Pits

<u>Scientific Name</u> <u>lbs./acre</u>	<u>Common Name</u>	
<u>Oryzopsis hymenoides</u>	indian ricegrass	2.0
<u>Melilotus officinalis</u>	yellow sweetclover	1.0
<u>Atrilex canescens</u>	fourwing saltbush	2.0
<u>Chrysothamnus nauseosus</u>	rabbitbrush	2.0*
<u>Atriplex confertifolia</u>	shadscale	2.0*
	Total	9.0
Approved in 1992		

community with the planting of the additional species shown in Table 4.6-3. This revegetation effort is not expected

Table 7.1-1 Reclamation Schedule and Timetable

<u>Pit Complex or Site</u>	<u>Year</u>	<u>Jobs</u>
Taurus	1987 (1)	rip & seed top of dump
	1990 (2 & 6)	roads ripped & seeded
	1990 (2)	pit berms
Sigma Emma	1987(1)	dump berms
	1987(1)	rip & seed top of dump
	1990 (2, 6 & 7)	roads ripped & seeded
	1990 (2)	pit berms
Roadside I & II	1987 (1)	dump berms
	1992 (4)	rip & seed top of dump
	2004	topsoil and revegetate 1/2 backfilled pit
	2008	topsoil and revegetate 1/2 backfilled pit
Blue Chalk North	1989 (1 & 4)	rip and seed rhyolite-covered portion of dump top
	2002	pit berm
	2013*	pit berm
Fluro	2008*	rock on tuff disposal cell
	2008*	rip and revegetate dump top and backfilled pit surface
	2008*	pit berm

Table 7.1-1 Reclamation Schedule and Timetable con't.

<u>Pit Complex or Site</u>	<u>Year</u>	<u>Jobs</u>
	2009*	roads ripped & seeded
Rainbow seed 1/2	1989 (1 & 4)	rip rhyolite & top of existing dump
	1997	pit berm
	2001*	rock on tuff disposal cell
Rainbow	2001*	rip and revege-
	tate backfilled pit	
	2012*	pit berm
	2012*	rip rhyolite & seed 1/2 top of existing dump
	2014*	roads ripped & seeded
Blue Chalk South	1989 (1)	rip & seed top of dump
	1995*	pit berm
	1998*	rock on tuff disposal cell
	1998	seed backfilled pit
	2017*	pit berm
	2018	roads ripped & seeded
Roadside/Fluro #3 & #4*	1990 (2)	pit berm
	2004	pit berm
	2004	rock on tuff disposal cell
	2010	roads ripped & seeded

Table 7.1-1 Reclamation Schedule and Timetable con't.

<u>Pit Complex or Site</u>	<u>Year</u>	<u>Jobs</u>
Section 16*	1991 (3)	pit berm
	1998 (4)	topsoil & seed
		1/3 dump top and
		backfilled pit
		surface
	2005	pit berm
	2005	topsoil & seed
		1/3 dump top and
		backfilled pit
		surface
Monitor*	2009	pit berm
	2009	topsoil & seed
		1/3 dump top
		and backfilled
		pit surface
	2030	pit berm
	1993	pit berm
	1993	topsoil & seed
		1/3 dump top
	2001	pit berm
Camp*	2001	topsoil & seed
		1/3 dump top
	2016	pit berm
	2016	topsoil & seed
		1/3 dump top
Southwind*	2020	pit berm
	2020	topsoil & seed
		dump top
	2024	pit berm
	2024	topsoil & seed
		dump top



Table 7.1-1 Reclamation Schedule and Timetable con't.

<u>Pit Complex or Site</u>	<u>Year</u>	<u>Jobs</u>
Mine camps and roads	2033-34	structure removal & sites & roads seeded

- (1) Work Completed Prior to 1990
- (2) Work Completed in 1990
- (3) Work Completed in 1991
- (4) Work Completed in 1992
- (5) Work Completed in 1993
- (6) Work Completed in 1994
- (7) Work Completed in 1995
- \* Future Mine Pits and Dumps

Table 7.1-2 Chronological Schedule

Year	Job	Site	Division Status
1987 (1)	rip & seed dump top	Taurus	Variance
	rip & seed dump top	Sigma Emma	Variance
	dump berms	Sigma Emma	Released
	dump berms	Roadside I&II	Released
1989 (1 & 4)	rip & seed dump top	Blue Chalk North	Variance
	rip & seed dump top	Blue Chalk South	Variance
	rip & seed 1/2 dump top	Rainbow	Variance
1990 (2)	pit berms, roads seeded	Taurus	Released
	pit berms, roads seeded	Sigma Emma	Released
	pit berms	Roadside/Fluro	Released
1991 (3)	pit berm	Section 16 N#1	Released
1992 (4)	rip & seed dump top	Roadside I&II	Pending
1998	pit berm, topsoil & seed 1/3 dump top	Monitor	
	pit berm	Blue Chalk North	
	rock on tuff	Blue Chalk	
	disposal cell	North	
	rip & seed	Blue Chalk	
	backfilled pit	North	
	topsoil & seed 1/3 dump top and backfilled pit	Section 16	Pending
2001	pit berm, rock on tuff disposal cell	Rainbow	
	rip and seed	Rainbow	
	backfilled pit		
	pit berm, topsoil & seed 1/3 dump top	Monitor	

Table 7.1-2 Chronological Schedule con't.

<u>Year</u>	<u>Job</u>	<u>Site</u>	<u>Division Status</u>
2002	pit berm	Blue Chalk North	
2004	topsoil & seed 1/2 backfilled pit pit berm, cover tuff disposal cell	Roadside I & II  Roadside/Fluro #3 & #4	
2005	pit berms topsoil backfilled pit topsoil & seed 1/3 dump top and backfilled pit, pit berm	Roadside/Fluro Roadside I & II Section 16	
2008	rock on tuff disposal cell topsoil & seed 1/2 backfilled pit rip & seed dump top and backfilled pit, pit berms	Fluro  Roadside I & II  Fluro	
2009	roads seeded pit berm, topsoil & seed 1/3 backfilled pit and dump top	Fluro Section 16	
2010	roads seeded pit berms	Roadside/Fluro Section 16	
2012	pit berm, rip & seed 1/2 dump top	Rainbow	
2013	pit berms	Blue Chalk North	
2014	roads ripped & seeded	Rainbow	
2016	pit berm, topsoil & seed 1/3 dump top	Monitor	

Table 7.1-2 Chronological Schedule con't.

<u>Year</u>	<u>Job</u>	<u>Site</u>	<u>Division Status</u>
2017	pit berm	Blue Chalk South	
2018	roads ripped & seeded	Blue Chalk South	
2020	pit berm, topsoil & seed dump top	Camp	
2024	pit berm, topsoil & seed dump top	Southwind	
2030	pit berm	Section 16	
2033-34	camps & roads seeded structural removal	Camps & Roads	
2034-37	final monitoring		